

## WHAT IS CLAIMED IS:

1. A process for producing a composition enriched in higher diamondoids which process comprises:
  - a) selecting a feedstock comprising recoverable amounts of higher diamondoids in admixture with nondiamondoid components;
  - b) contacting the feedstock with an elevated pressure of hydrogen at an elevated temperature in the presence of a catalyst to preferentially react at least a portion of the nondiamondoid components therein to facilitate recovery of higher diamondoids from the reacted feedstock.
2. The process of Claim 1 additionally comprising step c)
  - c) recovering higher diamondoid(s) from the reacted feedstock.
3. The process of Claim 1 wherein said contacting is hydroprocessing.
4. The process of Claim 3 additionally comprising step c)
  - c) recovering higher diamondoid(s) from the reacted feedstock.
5. The process of Claim 3 wherein said hydroprocessing comprises hydrocracking.
6. The process of Claim 5 additionally comprising step c)
  - c) recovering higher diamondoid(s) from the reacted feedstock.
7. The process of Claim 3 wherein said hydroprocessing comprises hydrotreating.
8. The process of Claim 7 additionally comprising step c)

- c) recovering higher diamondoid(s) from the reacted feedstock.
- 9. The process of Claim 1 wherein said contacting comprises hydrotreating followed by hydrocracking.
- 10. The process of Claim 9 additionally comprising step c)
  - c) recovering higher diamondoid(s) from the reacted feedstock.
- 11. The process of Claim 1 wherein said contacting comprises hydrotreating and simultaneous hydrocracking.
- 12. The process of Claim 11 additionally comprising step c)
  - c) recovering higher diamondoid(s) from the reacted feedstock.
- 13. A process for recovering a composition enriched in higher diamondoids which process comprises:
  - a) selecting a feedstock comprising recoverable amounts of higher diamondoids in admixture with nondiamondoid components;
  - b) hydroprocessing the feedstock to convert at least a sufficient amount of nondiamondoid components therefrom to permit recovery of higher diamondoids from the hydroprocessed feedstock; and
  - c) fractionating the hydrocracked feedstock into lower boiling point fraction(s) enriched in converted nondiamondoid components and higher boiling fraction(s) enriched in higher diamondoids
- 14. The process of Claim 13 additionally comprising step d)
  - d) recovering a fraction enriched in at least one higher diamondoid.

15. A process for recovering a composition enriched in higher diamondoids which process comprises:
  - a) selecting a feedstock comprising recoverable amounts of higher diamondoids in admixture with nondiamondoid components;
  - b) fractionating the feedstock to provide a fraction comprising recoverable amounts of higher diamondoids and nondiamondoid components; and
  - c) contacting the feedstock fraction with an elevated pressure of hydrogen at an elevated temperature in the presence of a catalyst to react at least a portion of nondiamondoid components therein to facilitate recovery of higher diamondoids from the reacted feedstock fraction.
16. The process of Claim 15 additionally comprising step d)
  - d) recovering higher diamondoid(s) from the reacted feedstock fraction.
17. The process of Claim 15 wherein said contacting is hydroprocessing.
18. The process of Claim 15 wherein said contacting comprises hydrocracking.
19. The process of Claim 15 wherein said contacting comprises hydrotreating.
20. The process of Claim 15 wherein said contacting is hydrotreating followed by hydrocracking.
21. The process of Claim 15 wherein said contacting comprises hydrotreating and simultaneous hydrocracking.
22. The process of Claim 15 wherein the feedstock fraction is a distillation residue.
23. The process of Claim 15 wherein the feedstock fraction is an overhead fraction.

24. The process of Claim 15 wherein the contacting is at an overall pressure of from 200 to 4000 psi and the elevated temperature is from 300 to 950°F.
25. The process of Claim 15 wherein the process is a continuous process operating at space velocity of from 0.02 to 20 hrs<sup>-1</sup>.
26. The process of Claim 15 wherein the catalyst is a heterogeneous catalyst.
27. The process of Claim 15 wherein the catalyst comprises noble metal.
28. The process of Claim 15 wherein the catalyst comprises base metal.
29. The process of Claim 15 wherein the catalyst comprises zeolite.
30. The process of Claim 15 wherein the catalyst comprises silica or alumina, or silica-alumina.
31. The process of Claim 15 wherein the temperature is from about 300 to 950° F, the total pressure is from about 200 to 4000 psi and the space velocity is from about 0.02 to 20 hrs<sup>-1</sup> and the catalyst is a noble metal catalyst.
32. The process of Claim 15 wherein the temperature is 300 to 950°F, the total pressure is from about 200 to 4000 psi, the space velocity is 0.02 to 2.0 hrs<sup>-1</sup> the hydrogen circulation rate is from 200 to 20,000 scf/bbl of feed and the catalyst is a base metal catalyst.